AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1.   (Currently Amended) A method for simulating a multi-dimensional space, comprising:

generating a sequence of pseudo-random numbers according to a prescribed quasi-Monte Carlo model; ~~and~~

mapping each pseudo-random number R of the sequence of random numbers into multiple variables of unique values for the multi-dimensional space, the multi-dimensional space including D dimensions, where D is a number~~.~~; and

selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein each of the multiple variables of the multi-dimensional space represents a corresponding D dimension value and wherein each dimension is characterized by a minimum and a maximum value, further wherein each dimension is characterized by a prescribed resolution S, and wherein S is the resolution of each dimension, and a ratio r, as defined by $r = s^D/P^N$ can be predetermined to be a prime number so that the value for S can be derived from the equation for r.

2.   (Cancelled).

3.   (Cancelled).

4.   (Cancelled).

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5.   (Cancelled).

6.   (Cancelled).

7.   (Currently Amended) The method of claim [[6]] 1, wherein the D dimension
      values are further characterized by a first dimension D0 that includes minimum
      and maximum values defined as D0.min and D0.max, respectively, a second
      dimension D1 that includes minimum and maximum values defined as D1.min
      and D1.max, etceteras, up to a Dth dimension.

8.   (Cancelled).

9.   (Cancelled).

10.   (Currently Amended) A method for simulating a multi-dimensional space,
      comprising:
              generating a sequence of pseudo-random numbers according to a
      prescribed quasi-Monte Carlo model;
              mapping each pseudo-random number R of the sequence of random
      numbers into multiple variables of unique values for the multi-dimensional space,
      the multi-dimensional space including D dimensions, where D is a number,
      wherein each of the multiple variables of the multi-dimensional space represents
      a corresponding D dimension value and wherein each dimension is characterized
      by a minimum and a maximum value, the D dimension values further being
      characterized by a first dimension D0 that includes minimum and maximum
      values defined as D0.min and D0.max, respectively, a second dimension D1 that
      includes minimum and maximum values defined as D1.min and D1.max,
      etceteras, up to a Dth dimension, further wherein each dimension is

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characterized by a prescribed resolution S; and

selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein ~~selecting the value of S includes deriving the value of S such that~~ S is the resolution of each dimension and a ratio r, as defined by $r = s^D/P^N$, ~~is not factorable by one of the following selected from the group consisting of base P and the number of dimensions D, and where N is the number of pseudo-random numbers and r is a prescribed prime number~~ can be determined to be a prime number so that the value for S can be derived from the equation for r.

11. (Currently Amended) A method for simulating trace impedance of a printed circuit board characterized by at least three dimensions of a multi-dimensional space, said method comprising:

generating a sequence of pseudo-random numbers according to a prescribed quasi-Monte Carlo model; ~~and~~

mapping each pseudo-random number R of the sequence of random numbers into multiple variables of unique values for the multi-dimensional space, the multi-dimensional space including D dimensions, where D is a number~~.~~; and

selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein each of the multiple variables of the multi-dimensional space represents a corresponding D dimension value and wherein each dimension is characterized by a minimum and a maximum value, further wherein each dimension is characterized by a prescribed resolution S, and wherein S is the resolution of each dimension, and a ratio r, as defined by

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$r = s^D/P^N$ can be predetermined to be a prime number so that the value for S can be derived from the equation for r.

12.   (Cancelled).

13.   (Cancelled).

14.   (Cancelled).

15.   (Cancelled).

16.   (Cancelled).

17.   (Currently Amended) The method of claim ~~16~~ 11, wherein the D dimension values are further characterized by a first dimension D0 that includes minimum and maximum values defined as D0.min and D0.max, respectively, a second dimension D1 that includes minimum and maximum values defined as D1.min and D1.max, etceteras, up to a Dth dimension.

18.   (Cancelled).

19.   (Cancelled).

20.   (Currently Amended) Apparatus for simulating trace impedance of a printed circuit board, the printed circuit board characterized by at least three dimensions of a multi-dimensional space, said apparatus comprising:

    a random number generator for generating a sequence of pseudo-random numbers according to a prescribed quasi-Monte Carlo model;

a mapping processor for mapping each pseudo-random number R of the sequence of random numbers into multiple variables of unique values for the multi-dimensional space, the multi-dimensional space including D dimensions, where D is a number, wherein each of the multiple variables of the multi-dimensional space represents a corresponding D dimension value and wherein each dimension is characterized by a minimum and a maximum value, the D dimension values further being characterized by a first dimension D0 that includes minimum and maximum values defined as D0.min and D0.max, respectively, a second dimension D1 that includes minimum and maximum values defined as D1.min and D1.max, etceteras, up to a Dth dimension, further wherein each dimension is characterized by a prescribed resolution S; and

a value selector for selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein selecting the value of S includes deriving the value of S such that S is the resolution of each dimension and a ratio r, as defined by $r = s^D/P^N$, is not factorable by one of the following selected from the group consisting of base P and the number of dimensions D, and where N is the number of pseudo-random numbers and r is a prescribed prime number can be determined to be a prime number so that the value for S can be derived from the equation for r.

21.   (Currently Amended) A method of manufacturing a printed circuit board comprising:

characterizing the printed circuit board by at least three dimensions of a multi-dimensional space; and

manufacturing the printed circuit board in accordance with a simulated trace impedance, the simulated trace impedance obtained by:

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generating a sequence of pseudo-random numbers according to a prescribed quasi-Monte Carlo model;

mapping each pseudo-random number R of the sequence of random numbers into multiple variables of unique values for the multi-dimensional space, the multi-dimensional space including D dimensions, where D is a number, wherein each of the multiple variables of the multi-dimensional space represents a corresponding D dimension value and wherein each dimension is characterized by a minimum and a maximum value, the D dimension values further being characterized by a first dimension D0 that includes minimum and maximum values defined as D0.min and D0.max, respectively, a second dimension D1 that includes minimum and maximum values defined as D1.min and D1.max, etceteras, up to a Dth dimension, further wherein each dimension is characterized by a prescribed resolution S; and

selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein selecting the value of S includes deriving the value of S such that S is the resolution of each dimension and a ratio r, as defined by $r = s^D/P^N$, is not factorable by one of the following selected from the group consisting of base P and the number of dimensions D, and where N is the number of pseudo-random numbers and r is a prescribed prime number can be determined to be a prime number so that the value for S can be derived from the equation for r.

22.   (Currently Amended) A computer system, comprising:

a printed circuit board manufactured in accordance with a simulated trace impedance, said printed circuit board including impedance traces that

characterize at least three dimensions of a multi-dimensional space of said printed circuit board , wherein said impedance traces include trace impedances obtained by:

generating a sequence of pseudo-random numbers according to a prescribed quasi-Monte Carlo model;

mapping each pseudo-random number R of the sequence of random numbers into multiple variables of unique values for the multi-dimensional space, the multi-dimensional space including D dimensions, where D is a number, wherein each of the multiple variables of the multi-dimensional space represents a corresponding D dimension value and wherein each dimension is characterized by a minimum and a maximum value, the D dimension values further being characterized by a first dimension D0 that includes minimum and maximum values defined as D0.min and D0.max, respectively, a second dimension D1 that includes minimum and maximum values defined as D1.min and D1.max, etceteras, up to a Dth dimension, further wherein each dimension is characterized by a prescribed resolution S; and

selecting a value of S according to a desired accuracy of a final simulation value, wherein the value of S defines a grid for use in conjunction with the mapping of the pseudo-random numbers into the multiple variables of the multi-dimensional space, wherein~~ selecting the value of S includes deriving the value of S such that~~ S is the resolution of each dimension and a ratio r, as defined by $r = s^D/P^N$, ~~is not factorable by one of the following selected from the group consisting of base P and the number of dimensions D, and where N is the number of pseudo-random numbers and r is a prescribed prime number~~ can be determined to be a prime number so that the value for S can be derived from the equation for r.